

What is claimed is:

1 1. A laundry dryer having a gas combustion apparatus, the apparatus
2 comprising:

3 means for supplying gas;
4 a mixing pipe, having a mixing passage extending from an inlet end to an outlet end,
5 for mixing the gas supplied by said gas supplying means with primary air, the primary air and
6 gas entering the mixing passage at the inlet end and a gas-and-air mixture exiting the mixing
7 passage at the outlet end; and

8 a flame holder, disposed at the outlet end of said mixing pipe, for separating the gas-
9 and-air mixture exiting said mixing pipe into a complex plurality of jetted streams.

1 2. The laundry dryer as claimed in claim 1, further comprising an igniter,
2 disposed adjacent the outlet end of said mixing pipe, for igniting the gas-and-air mixture of
3 said mixing pipe.

1 3. The laundry dryer as claimed in claim 2, said flame holder comprising:
2 an annular hub having a center flame hole and a plurality of outer flame holes formed
3 at a predetermined interval around the center flame hole; and
4 a plurality of outer wings, radiating from said annular hub, at intervals corresponding
5 to the interval of the outer flame holes of said annular hub.

1 4. The laundry dryer as claimed in claim 3, wherein at least one of said outer
2 wings has a circumferential width of at least twice the circumferential width of any other

3 outer wing of said outer wings, and wherein said igniter is disposed adjacent said at least one
4 outer wing.

1 5. The laundry dryer as claimed in claim 3, wherein at least one of the outer
2 flame holes has a circumferential length of at least twice the diameter of any other outer flame
3 hole of said outer flame holes, and wherein said igniter is disposed adjacent said at least one
4 outer wing.

1 6. The laundry dryer as claimed in claim 3, wherein said outer wings
2 respectively comprise a plurality of bent portions formed at distal ends of said outer wings to
3 be directed back toward said mixing pipe, each of said bent portions being inclined at a
4 predetermined angle with respect to a central axis of said mixing pipe and said annular hub.

1 7. The laundry dryer as claimed in claim 6, wherein the predetermined angle is
2 between 10° and 30°.

1 8. The laundry dryer as claimed in claim 3, further comprising a pair of support
2 arms, extending from opposite sides of said annular hub, to be fixed to an outer surface of
3 said mixing pipe so that said flame holder is disposed at a predetermined distance forward of
4 the outlet end of said mixing pipe.

1 9. The laundry dryer as claimed in claim 3, wherein each of the plurality of
2 outer flame holes of said annular hub is aligned with one of said outer wings.

1 10. The laundry dryer as claimed in claim 3, said annular hub comprising:
2 a rounded inner edge protruding forwardly from a perimeter of the center flame hole;
3 and

4 a plurality of inner wings extending from an inner circumference of said rounded
5 inner edge.

1 11. The laundry dryer as claimed in claim 10, said inner wings comprising:
2 a plurality of rearward bosses, each having a predetermined length extending directly
3 toward said mixing pipe; and

4 a plurality of inward bosses extending toward the center of said annular hub,
5 wherein circumferential widths of said rearward and inward bosses fully occupy the
6 inner circumference of said rounded inner edge.

1 12. The laundry dryer as claimed in claim 11, wherein said inward bosses are
2 respectively disposed between said outer wings.

1 13. The laundry dryer as claimed in claim 12, wherein each of the plurality of
2 outer flame holes of said annular hub is aligned with one of said outer wings.

1 14. The laundry dryer as claimed in claim 1, wherein said flame holder is
2 disposed at a predetermined distance forward of the outlet end of said mixing pipe.

1 15. The laundry dryer as claimed in claim 1, wherein said mixing pipe is inclined
2 at a predetermined angle upward, from the inlet end to the outlet end, to facilitate propagation

3 of a flame.

1 16. The laundry dryer as claimed in claim 1, wherein the mixing passage of said
2 mixing pipe has a circular cross-section that tapers from the outlet end to the inlet end.

1 17. The laundry dryer as claimed in claim 1, said gas supplying means
2 comprising:

3 a valve for controlling the supplied gas; and

4 a gas nozzle, disposed at the inlet end of said mixing pipe, for injecting the supplied
5 gas into said mixing pipe according to the control of said valve.